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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/541,031

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Franco Cocchini

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EXAMINER

DEGHAN, QUEENIE S

ART UNIT

PAPER NUMBER

1791

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DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/541,031	Applicant(s) COCCHINI ET AL.	
	Examiner QUEENIE DEGHAN	Art Unit 1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 June 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 8-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 8-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 June 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>6/28/04, 4/24/06</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

1. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 8-14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 8 and 10 recites applying a spin frequency, zone length and drawing speed such that a torsion and 60% detorsion is met. It is unclear how the spin frequency, zone length, and drawing speed is related to a torsion or detorsion, since the torsion is a spin in one direction and a detorsion is a spin the other direction. Furthermore, claim 14 recites $2V/v\pi$, with the units for V is m/s and for v is Hz. It is unclear how the resulting variable, θ is measured in turns. Where is the reference to meters? Also, the term θ is called a spin amplitude. However, other prior art refers to spin amplitude in units of turns/meter. It is unclear if the applicant's term of spin amplitude is the same as it is commonly referred to in other prior art, where the amplitude has is referenced to a unit of length. Nonetheless, an interpretation of these variables is given as best as can be in the rejections to follow.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 8 and 10 are rejected under 35 U.S.C. 102(e) as being anticipated by Garner et al. (2004/0017986). Garner disclose a method for producing an optical fiber having low PMD comprising providing a glass optical fiber preform, heating the end portion of the preform, drawing the heated glass material at a drawing speed V to form an optical fiber, the drawn glass having a viscous zone and applying a substantially sinusoidal spin to the fiber, which is transmitted to the viscous zone. Furthermore, the drawing and spin conditions (i.e. the spin function frequency, viscous zone length, and drawing speed) of Garner is such that that both a torsion and at least a 60% detorsion are applied to the viscous zone as indicated by the positive and negative values (abstract, [0038], [0025]-[0026], [0013]-[0019], [0040]-[0042], figures 3b, 3c, 5a-6).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 9 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Garner et al. (2004/0017986) as applied to claims 8 and 10 above, in view of Moridaira (2003/0086670). The applicant has recited an equation that is essentially a result to be achieved. It would have been obvious to one of ordinary skill in the art at the time of the invention to have expected the method of Garner to result in satisfaction of the claimed equation, since the method steps of Garner are essentially the same as the claimed limitations of claim 8.

9. Additionally, since limits on the variables (i.e. drawing rate, spin frequency, etc.) have not been explicitly provided, there exists a large number of combinations of values that would satisfy this equation. For example, Garner discloses prior art that teaches spin function frequencies and drawing speeds. Garner mentions examples including a frequency of 60 cycles/min for a drawing speed of 1.5m/s and also a frequency of 106cycles/min or 1.76 cycles/sec with a drawing speed of 3m/s ([0042]), suggesting that

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a spin frequency is a known variable to vary depending on the drawing speed. A frequency of 1.76 cycles/sec with a drawing speed of 3m/s provides for a V/v ratio of 1.7 or a viscous zone length in the range of 0.515m-1.0m. However, Garner fails to mention a viscous zone length. Moridaira teaches an optical fiber drawing process comprising setting a furnace length and heater placement in a drawing tower so as to produce the desired viscous zone length. Similarly, Moridaira teaches correlating a viscous zone length to the drawing speed and preform diameter, for example a drawing speed of 1500m/min and a preform diameter of 120mm would need a viscous length of 900mm or 0.9m ([0184], [0192]-[0193]). Such a viscous zone length would satisfy the claimed limitation based on the spin function and drawing speed of Garner. That is:

$$1.7 * L \leq V/v \leq 3.3L$$

$$1.7 * 0.9 \leq 1.7 \leq 3.3 * 0.9$$

$$1.53 \leq 1.7 \leq 2.97$$

The applicant has not really set forth any real limits to what the values L , V , and v are. Therefore, a large number of combination of values would satisfy this limitation. Both Garner and Moridaira has suggested varying variable such as spin frequencies, draw rates, and viscous zone length as known variables in the drawing process to achieve the desired properties in the drawn optical fiber. Accordingly, it would have been obvious to one of ordinary skill in the art to combine known variables, such as the suggested spin frequency and drawing rate of Garner and the viscous zone length, hence satisfying the claimed inequality, in order to reduce PMD and provide excellent hydrogen resistance in the optical fiber

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10. Claims 12-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Garner et al. (2004/0017986) as applied to claim 8 above, and further in view of Evans et al. (5,822,487). Garner fails to specifically disclose a maximum applied torsion or a maximum frozen-in torsion. However, Garner acknowledges the spin actually introduced to the fiber compared to the spin attempted to be introduced is less than 100% ([0020]). Evans et al. teach a method for spinning a fiber wherein the maximum applied torsion is at least 4 turns/meter (col. 5 line 66 to col. 6 line 4). Since Garner teaches that the frozen-in torsion is less than 100% the applied torsion, it would have been obvious to one of ordinary skill in the art at the time of the invention to have expected the frozen-in torsion to be less than 4 turns/meter, since the applied torsion is 4 turns/meter.

11. Similarly to the above claims, the applicant has recited conditions that is essentially a result to be achieved. It would have been obvious to one of ordinary skill in the art at the time of the invention to have expected the method of Garner to result in satisfaction of the claimed equation, since the method steps of Garner are essentially the same as the claimed limitations of claim 8. Additionally, since limits on the variables (i.e. drawing rate, spin frequency, etc.) have not been explicitly provided, there exists a large number of combinations of values that would satisfy this equation.

12. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Garner et al. (2004/0017986) and Evans et al. (5,822,487), as applied to claim 13 above, in further view of Cocchini et al. (WO 01/33184). The applicant has recited an equation that is essentially a result to be achieved. It would have been obvious to one of ordinary

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skill in the art at the time of the invention to have expected the method of Garner to result in satisfaction of the claimed equation, since the method steps of Garner are essentially the same as the claimed limitations of claim 8.

13. Additionally, since limits on the variables (i.e. drawing rate, spin frequency, etc.) have not been explicitly provided, there exists a large number of combinations of values that would satisfy this equation. For example, Garner teaches an example wherein a spin function frequency of 1.76 cycles/sec and drawing speed of 3m/s is applied to a fiber as it is drawn. Furthermore, Evans teaches a spin amplitude of 1 to 5 rotations (col. 4 lines 60-61). As previously mentioned, Evans also teaches an applied torsion of 4 turns/meter and Garner teaches an actual torsion of less than 100% of the applied, but does not specify how much less. Cocchini teaches applying a spin to a fiber wherein the actual frozen-in spin is only 29% of the applied spin (page 34). Applying the drawing conditions suggested by Garner, this provides for a spin amplitude (θ) in the range of 0.92 to 1.48 turns, as calculated in the following manner:

$$2V/v\pi \leq \theta \leq 2V/(\nu \pi(1-R))$$

$$2*3\text{m/s}/(1.76 \text{ cycles/sec}*3.14) \leq \theta \leq 2*3\text{m/s}/(1.76\text{cycles/sec}*3.14)(1-.29)$$

$$0.92 \leq \theta \leq 1.48$$

As mentioned, Evans teach a spin amplitude of 1 rotation, which satisfies this equation. It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teaching of Cocchini of a torsion difference of 29% to the spin conditions of Garner and Evans, resulting in satisfying the equation, since the examples provide actual data from which further experimentation can be derived.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to QUEENIE DEGHAN whose telephone number is (571)272-8209. The examiner can normally be reached on Monday through Friday 9:00am - 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on 571-272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Queenie Dehghan/
Examiner, Art Unit 1791